# SOCIAL PSYCHOLOGY
## Handbook of Basic Principles

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# 16

# *Mental Control*

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Mental control is the influence we exercise over our own minds. We use mental control whenever we alter our thoughts, emotions, motives, or other mental states in accord with priorities represented in our conscious thoughts. Most people have preferred states of mind. They would rather be happy than sad, serene than anxious, focused than scatterbrained, or amiable than angry. And even if they don't find some mental states generally valuable, they often have preferences shaped by time and circumstance—to sleep when tired in bed, to overcome egotism in settings that demand humility, to avoid prejudice when this is untoward, and so on. Quite simply, people would often like to achieve mental states in accord with their own preferences instead of having these things intrude on their minds randomly, inappropriately, or otherwise beyond their control.

Mental control is of importance to social psychology for at least three reasons. First, people regularly enter into social relations and perform social behaviors in order to produce mental control—there are *strategies* of mental control that are social. Someone might go to a party as a distraction from a failure at work, for example, or might avoid a person who serves as a reminder of some unhappy thought. A second reason that mental control is important in social psychology is that there are ways in which such control affects social life—there are *consequences* of mental control that are social. When a person becomes so involved in trying to control thoughts of a secret crush on someone, for example, that the secret devolves into an obsession, the seemingly innocent act of mental control accumulates unwanted and potentially destructive social consequences. A third point of contact between mental control and social psychology is that people often engage in mental control for social reasons—there are *motives* for mental control that are social. They may suppress a thought because it is socially inappropriate, for instance, or express an emotion because it fits the social situation. Mental control and social interaction have profound effects on each other, and this interplay deserves careful psychological inquiry.

This chapter explores research and theory on mental control in sections that draw broadly on these three topics—mental control strategies, consequences, and motives. In the first section, the nature of mental control is the pivotal concern. We examine theories of the mechanisms of mind that support the operation of this key function with a view toward understanding the strategies of control. A second section features the interplay between mental control and its most frequent target—emotion. Here, we consider how and with what effect people manage their emotional states by controlling their thoughts and experiences, and we explore some undesired by-products and consequences of mental control. The third section of the chapter focuses on several explicit points of contact between mental control and social interaction. We review instances in which people attempt to control their minds for social purposes, and in which the social motivation of mental control is therefore noteworthy.

## THE NATURE OF MENTAL CONTROL

The idea that we can and do control our minds is a matter of perpetual controversy in philosophy and psychology. Mental control is one of those largely inside-the-head activities that requires considerable circumstantial corroboration to satisfy scientific scrutiny (Wegner & Pennebaker, 1993a). Even viewed with a healthy dose of skepticism, however, current theory and evidence suggest that the concept of mental control is mature enough to serve as a useful basis for understanding a number of personal and social phenomena (Wegner, 1989; Wegner & Pennebaker, 1993b; Wegner & Schneider, 1989). In this section, we examine the conceptual underpinnings of

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mental control, analyzing the idea by assessing in turn common beliefs about it, its place in a general theory of mind, its interrelation with concepts of consciousness and intention, and the categories of mental control that are most commonly distinguished.

### Beliefs about the Mind

The title character of the classic horror film *Carrie* explained her unique ability this way: "If I concentrate hard enough, I can move things." Most people would agree that her mental feats in this case were cinematic fiction (e.g., wrecking the high school gym with a stern grimace when the prom wasn't going her way), but a remarkably large segment of the population claims to believe in noncinematic powers of mind that are almost as astonishing. A poll by Gallup and Newport (1991) found that 49% of Americans believe in some form of ESP and 25% accept the less spooky but similarly arguable notion that mental effort may be all that is required to overcome severe health problems.

Belief in the power of mind over body and health has arisen often in popular medicine and religion, surfacing through spokespersons such as Mary Baker Eddy, Norman Vincent Peale, and Norman Cousins. The idea that a scientific approach to medicine should be jettisoned in favor of a "mind cure" seems perennial (Meyer, 1988). Contemporary expressions of this belief include, for example, a $69.95 series of audiotapes on "Natural Breast Enlargement" offered by Sublime Software of Glendora, California. Part of a 12-week program that "uses hypnosis and creative visualization to stimulate breast growth," the tape intones: "Focus your attention on my words. Your breasts become whatever they are willed to be. You are the authority over your breasts. You can do it. You are a winner. . . . Your breasts grow like ripening fruit. They're warm and they're growing."

Crackpots and fringe cheerleaders for the potency of mind are attended by bandwagons of self-help writers who tout more widely and persuasively the effectiveness of an optimistic approach to daily tasks of work, love, and life. Versions of "affirmation," "imagination," or "self-hypnosis"—epitomized, for example, by the autosuggestion therapies of Emile Coué (1917; see also Baudouin, 1921; Paulhus, 1993)—permeate our beliefs about our minds, raising the "I think I can" maxim of the *Little Engine That Could* to the level of a cultural anthem. In any good-sized library, literally dozens of books can be found on willpower, concentration, the education of the will, and the control of life's fortunes by mental means (Starker, 1988). Scientific psychologists have not shied away from this theme, offering a variety of their own insights on the effective use of mind (see, e.g., Langer, 1989; Seligman, 1990).

All this belief in the sheer power of mind promotes the conviction that the mind can also control itself. After all, if the mind has the power to influence behavior and events, it makes sense that it can be bent toward self-change as well. And indeed, it does seem to work. People accept without skepticism many claims that they can control their own mental states probably because in some part this is true in daily life. Most people have effective mental control over such basics as sleep versus waking and attention versus disattention, for example, and they may be able to influence their levels of such things as happiness, anger, arousal, or dislike with some regularity as well. The belief in mental control probably also arises, however, from some of the same sources that promote overconfidence in the mind in general. Just as people adhere to hopes of ESP or mental breast enlargement, they grasp the idea of mental control and hold it dear. It would be nice if we could control our minds, so we continue to wish for this.

The mental control with which we are concerned in this chapter is the real thing, not the wished-for variety. This analysis is not focused on perceived control or desired control. Although literature exists on these variables (e.g., Bandura, 1977; Langer, 1975; Rotter, 1966; Taylor & Brown, 1988), and there are interesting interactions between real control and illusions about it or desires for it (Fiske & Emery, 1993), our interest concentrates primarily on understanding how real control functions. Given the apparent attractiveness of the idea of control, however, it may sometimes be a scientific challenge to pare away the wished-for control from whatever core of real mental control may be found at the center.

In the pursuit of an understanding of actual mental control, we should also mention that the study of such control is not helped very much by a simple ascription of causal agency to the person. At the extreme, the belief in mental control often translates into a sort of mystical attribution of control to people (Wegner & Vallacher, 1987), so to end up with homunculus theories that stop their analysis when they reach some version of a central decider or controller. We find that a basic model of mental control can be constructed without including such a free agent in the works. Although the classical conundrum of determinism versus free will suffuses any discussion of the control of mind (Dennett, 1984), our analysis comes down entirely on the side of a deterministic model. Without sanctioning the details of their formulations, we suspect that commentators such as Bargh (1990), Libet (1985), and Velmans (1991) are on the right track in attempting to trace processes of conscious control to mental mechanisms that are themselves fully predictable—and not necessarily conscious.

### Historical Notes

The attempt to understand the self-control of mind and emotion has important precursors in the history of psychology. Klausner (1965) and Schneider (1993) both trace concerns about mental control to the ancients, so it is no surprise that issues relevant to mental control appear in multiple modern schools of thought. Wegner and Pennebaker (1993a) suggest that the concept of mental control has been represented primarily in literature on *effortful attention, psychological defense, self-regulation and self-control,* and *coping with stress.*

The notion that people can attend or disattend to a stimulus through effort is part of many early theories of mind, but it was particularly well expressed by William James (1890). He elevated the notion of the "effort of attention" to a central place in psychological theory and

argued that the ability to influence one's own attentional state is the central phenomenon of will. Attending toward or away from mental contents, in this view, is the basic exercise of mental control, and the sign that such control is happening is that this takes effort to do. This approach to mental control is now active in the burgeoning study of controlled and automatic cognitive processes (e.g., Bargh, 1984, 1989; Gilbert, 1993; Hasher & Zacks, 1979; Jonides, Naveh-Benjamin, & Palmer, 1985; Kahneman & Treisman, 1984; Logan, 1979, 1988; Neumann, 1984; Norman & Shallice, 1986; Posner & Snyder, 1975; Shiffrin & Schneider, 1977; Stelmach & Hughes, 1985).

A contrasting view of mental control—as psychological defense—comes from the psychoanalytic literature. The notion of mental control as something a person *has* to do to avoid unwanted emotions or unacceptable ideas follows directly from Freud's notion that repression and other defensive processes arise to influence the contents of consciousness (e.g., 1915/1957). This approach reminds us that we may control our minds not on whim, but because we have strong reasons compelling us to do so, and moreover, that we may even exert control without being aware we are doing so. The contemporary literatures on repression (e.g., Erdelyi, 1993) and the defense mechanisms (e.g., Horowitz, 1988; Vaillant, 1986) carry this theme forward, and the current controversies about the volatility of memory (e.g., Loftus, 1993) highlight this focus.

A third relevant precursor to the concept of mental control is the literature on self-regulation and self-control. Beginning with control theories developed in the context of engineering (Wiener, 1948), psychologists have found it highly useful to examine the mechanisms necessary for producing control in human action (Carver & Scheier, 1981; Miller, Galanter, & Pribram, 1960; Powers, 1973; Vallacher & Wegner, 1985). Controlling a mind is a related problem, as it shares some of the basic elements of controlling, say, a steam engine or a smart bomb, and this observation allows a variety of insights. Self-control is a topic of interest in its own right in clinical psychology, and a notable literature on self-management techniques in the control of addiction, depression, anxiety, and other disorders contributes to this perspective (e.g., Baumeister, Heatherton, & Tice, 1994; Mahoney & Thoresen, 1974). The developmental paths leading to successful self-control in adults have been explored by Mischel (e.g., Mischel, Shoda, & Rodriguez, 1989), and these advances contribute to the study of mental control as well.

Finally, the literature on coping strategies has relevance for mental control. The idea that people might employ psychological techniques for coping with stress (e.g., Lazarus, 1990, 1991) adds to these prior literatures by emphasizing the differential choice of strategies for dealing with one's own mental states. This perspective expands the study of mental control to include those people who have been traumatized or otherwise stressed, and emphasizes the possibility that different approaches to coping with a state of mind can have different consequences for mental and physical health (e.g., Pennebaker, 1989, 1990, 1995; Tait & Silver, 1989).

The history of the study of mental control, brings together lines of thought from several strains of psychological thinking. Despite the differences mentioned in this overview, these traditional approaches have strong common themes. They all present variations on the idea that people may attempt to control their own mental contents, and that they do so for a variety of reasons. These basic ideas can be abstracted in a simple model that represents the core elements involved in the exercise of mental control. We turn to this model next.

## Mind and Mental Control

What sort of mental mechanism allows the mind to control itself? Any conceptualization of this mechanism must account for two different sorts of processes that must occur in mental control. First, there must be a process that designates the direction toward which the control will move the mind. This is a matter of finding and maintaining a goal, a desired mental state, and can be characterized as a *mental state selection process.* State selection occurs when the person elects to try to be less nervous before an audience, for example, as opposed to trying to be more nervous, trying to get angry, trying to go to sleep, trying to get confused, or any of an array of less expedient alternatives. The second process necessary for mental control involves the active implementation of the goal, the attempt to achieve the selected state. When the person attempts to overcome the nervousness by imagining that the audience is itself sitting there naked and embarrassed, for example, there may be an intended movement toward the desired state (Hoff, 1988). Nervousness may abate in the face of this heartening image. This is the *mental control process* itself. It is useful to examine each of these processes separately.

### *Mental State Selection Process*

People can envision states of mind that they would prefer over the ones they currently are experiencing, or the ones they expect to experience in a future situation. This requires the ability to conceptualize or imagine states of one's own mind, and this ability probably is acquired with cognitive development. What is needed is a representational model of mind (Gopnik, 1993)—the realization that minds can represent reality in ways that depart from reality. Children at the age of 3 may not have this ability, as they may not be able to comprehend the possibility that they previously believed something other than what they currently believe or are perceiving in reality to be the case. They might report, for example, after discovering that a candy box contained pencils, that they had always known it contained pencils and never had held the mistaken belief that it held candy. By the age of 4 or 5, however, children become capable of understanding that desires, beliefs, or feelings may change and be changed—and so can note that they used to think the box had candy in it. They realize, as do adults, that the mind is not always a faithful copy of reality but a representational system that can be influenced independently of what is real.

With the representation of mental states comes the capacity to have preferences about them. In the face of an

objectively painful stimulus, for example, the person who can represent mental states may now be able to wish not to feel the pain—rather than merely wish that the painful stimulus would go away. No doubt, however, there are important variations in the disconnection that can be achieved between the conceptions of mental states and the stimulus circumstances that normally induce them. Some states have commonly used names and appear to be understandable independent of their stimulus conditions. We all seem to know, for example, the names of several moods and states of mind such as sadness, worry, concentration, sleep, fear, or happiness. The complicated and temporally variable mental state brought on by reading *The Brothers Karamazov*, on the other hand, has no easily communicable label other than the mention of the book itself, and it is difficult to envision any conditions that could bring on this state or succession of states other than another reading. To the degree that mental states are easily represented in ways that allow them to slip free of specific instigating conditions, we can begin to exercise preferences for or against them that are not simply reducible to preferences for environments or objects.

At present, there is no handy census of controllable mental states. Academic psychology provides us with lots of names for mental states that seem to be likely candidates for control, at least in that these states have consensual labels. There are the basic emotions (e.g., fear, anger, happiness, sadness, surprise, disgust), evaluative or affective states (e.g., liking, love, hate), physiologically based motives (e.g., hunger, thirst, sexual desire), basic bodily states (e.g., sleep vs. wakefulness, arousal vs. rest), and cognitive states (e.g., concentration, suppression, belief, disbelief), just to start. This listing only begins to capture the general mental states that might be selected for control, as there are no doubt specific versions of these that could expand the list (perhaps beyond any utility). Although the states of *hate* or *concentration* can be named in these abstract terms, for example, they are directed or intentional states in that they usually have an object. A person "hates" spinach or "concentrates" on a dull history book. Thus, while mental control refers to mental states by their general labels, it is still the case that the states selected for control in any instance typically may have far more specific referents.

Although state selection sometimes appears to be deliberate and conscious (e.g., "Would I rather be hungry and feel good about my diet or full and depressed about my weight?"), it is probably more accurate to ascribe variations in selected states to the influence of nondeliberate, unconscious, and automatic processes. Among these are chronic tendencies to select mental states that take the form of stable personality dispositions. For example, some people are typically afraid to experience anxiety (Reiss, Peterson, Gursky, & McNally, 1986), and others are chronically inclined to desire happy thoughts and avoid sad ones (Wegner & Zanakos, 1994). Such dispositions toward anxiety sensitivity and depression sensitivity incline people toward particular state selections across a variety of situations and over time.

State selection may be more aptly portrayed in many cases, however, as an automatic response to situations. We may be relatively unconcerned about controlling our anger when we are sitting alone in our rooms, for example, even to the extent that we seek out thoughts of what has made us angry and ruminate on these thoughts in delicious detail. We may revile the boss in our minds, rehearsing each affront to our dignity suffered as a result of the boss's brainless Napoleonic excesses. Yet in the presence of that despicable creature, we hope dearly to squelch the anger and, if we don't grovel at the boss's feet, we at least desire to recede anonymously into the background of our workplace. Social situations provide powerful instigations toward the selection of mental states, and these tend to function quite automatically and reflexively (cf. Bargh, 1990; Bargh & Gollwitzer, 1994). On the day we have lost track of the boss and are quietly fulminating about the latest infraction, only to have the boss appear glowering over our shoulder, the impulse to cool down and regain composure hits suddenly and with a force that reveals little conscious deliberation.

The disposition/situation dichotomy is useful for categorizing many state selection mechanisms, but this broad distinction oversimplifies the ways in which we select mental states to control. Repeated exposure to situations, for example, may translate over time into apparent dispositional effects. The person who has chosen a life as a cleric may not have the initial disposition to avoid mental states connected with sexual arousal, for instance, but may find that this state selection process is so widely required that it becomes habitual. Evangelist Billy Graham, commenting on his colleagues Jim Bakker and Jimmy Swaggart who fell to sexual excesses, said, "I learned . . . that I would be tempted in those areas. So I never rode in a car with a woman alone. I never have eaten a meal with my secretary alone or ridden in a car with her alone. If we sit in here and I dictate something to her, the door is open. And just little things like that, that people would think are so silly, but it was ingrained in me in those early years" (Aikman, 1990, p. 14). The person who spends a lifetime responding to the requirements of a role by setting aside thoughts of sex may find that this practice becomes a learned disposition.

There may also be state selection pressures that arise in the interaction of person and situation. An individual who has suffered a traumatic experience may, for instance, try to avoid thoughts of that trauma—particularly when situational factors yield especially strong reminders of the experience. Similarly, a person who sometimes has had trouble sleeping may be especially motivated to get to sleep just when the situation conspires to make it difficult. The night before an upcoming stressful event may not just involve the stress, then, but may also increase the person's motivation to get to sleep in the face of the stressor.

At a general level, these personal, situational, and interactional variations in state selection follow from the recognition that people have representations of potential states of mind. These representations become *goals* for the mind as the result of an array of linkages each person forms between the set of potential states and the set of imagined future circumstances. Knowing that one is going to encounter a certain circumstance in a few moments is

enough to suggest to a particular person that a certain set of mental states should be controlled. State selection processes create a prioritization of mental states for any person in a situation, such that the person will be oriented toward creating the mental state that is preferred in that situation by the person.

Much of what is currently known or theorized about state selection processes takes the form of a few basic hypotheses about the mental states people prefer. One broad hypothesis is that people generally prefer pleasant states of mind to unpleasant ones (e.g., Clark & Isen, 1982). Although this leaves the issue of what is pleasant or unpleasant open for analysis, this general *hedonic rule* for state selection serves as a useful first step in the prediction of mental control preferences. A second general principle for state selection is a *propriety rule*, the idea that certain mental states are more proper or correct in view of social or moral pressures (e.g., Hochschild, 1983; Wegner & Erber, 1993). A third broad suggestion regarding state selection is a *utility rule*, the proposition that people adopt or prefer those mental states that will be instrumental in achieving other desired goals (e.g., Parrott, 1993; Smith, 1992). This set is not exhaustive, as other rules could be described that provide overarching themes in state selection. Mental control may serve a variety of motives in everyday life, and the desires for pleasure, social approval, and competence are just a few.

### *Mental Control Process*

Given that a particular mental state has been selected for control, there is now the question of how the control is exerted. It is useful to begin to answer this question by reviewing what is known about how any sort of control transpires. The analysis of control, as it originated in cybernetics (Wiener, 1948), is based on the notion that control entails at least two processes—a process that does something and a process that checks to see if something was done. To control the behavior of an unruly child who is loosed in a room full of souvenir commemorative Elvis plates, for example, one would first want to do something to keep the child from breaking the plates (assuming that this is a good idea). Some parents, for example, might feed the child candy at a high rate. Just as important, however, the parents would also attend constantly to the effectiveness of this ploy. A moment of reverie could spell disaster for the Presley legacy. Control implies both influence and an awareness of that influence's effect—an *operating* process and a *monitoring* process.

The human exercise of behavioral self-control has been described in terms of systems that include both operating and monitoring processes (e.g., Miller, Galanter, & Pribram, 1960; Powers, 1973). So, for instance, the intention to stop smoking might be deployed through an operating process that includes several strategies—not buying cigarettes, chewing gum instead, getting exercise, telling people about the plan to quit, thinking about other things when the desire arises, or the like. These operations would be accompanied by a monitoring process, a heightened awareness of smoking behavior or thoughts of smoking, that would aid in assessing whether the intended control was successful or not. Miller, Galanter, and Pribram (1960) suggested that the operating and monitoring processes might occur cyclically in a system they called a TOTE (test-operate-test-exit) unit.

Only recently has theoretical attention turned toward the interplay of operating and monitoring processes in mental control. Drawing on Miller, Galanter, and Pribram (1960), Uleman (1989) suggested that certain mental states might be controlled through TOTE units. Wegner (1992) proposed that thought suppression in particular could be understood through the interplay of an operating and a monitoring process. This realization has been elaborated by Wegner (1994) in terms of a theory of *ironic processes of mental control.*

This theory holds that normal and successful mental control occurs through two processes that work together to promote the intentional control of mental states. These include an *intentional operating process* that searches for the mental contents that will yield the desired state, and an *ironic monitoring process* that searches for mental contents that signal the failure to achieve the desired state. Both processes increase the cognitive accessibility (Higgins, 1989) of the mental contents for which they are searching. So, when a person is trying to be happy, the operating process searches for mental contents pertinent to happiness, whereas the monitoring process searches for mental contents that indicate that happiness has not been achieved. Although the operating process is effortful, consciously guided, and relatively proficient, the monitoring process is usually unconscious, less demanding of mental effort, and thus less proficient.

The two processes produce mental control by interacting over time. The operating process dominates the monitoring process as a rule, and it thus creates the desired change by filling the mind with thoughts and sensations that are relevant to the desired state. The monitoring process, in the meantime, searches surreptitiously for mental contents that indicate when control is needed, and so regulates whether or not the operating process will be initiated at any given time. If the monitor finds preconscious indications of control failure, it reinitiates the operating process. Because the monitor stays watchful of lapses in control, however, it keeps the mind sensitive to the mental conditions indicating the failure of intentional mental control. Therefore, when mental capacity is undermined and the effortful operating process is limited, the more subtle sensitivity supplied by the monitor can ironically create the mental state that corresponds to control failure. Under mental load, in other words, intentions to control the mind unleash a monitoring system that not only searches for the failure of mental control but then tends itself to create that failure.

In one sense, this approach can be understood as an elaboration of the study of behavior-monitoring effects initiated in research on self-regulation. The general finding in this area is that monitoring of a behavior or state increases the likelihood of occurrence of that behavior or state. In research by McFall (1970), for example, subjects monitoring their smoking behavior increased the frequency of smoking over time whereas those monitoring failures to smoke decreased the frequency of smoking over time.

When subjects are actively engaged in self-control, the effects of pure monitoring are not necessarily expected or found. For subjects trying to quit smoking, for example, conscious monitoring takes on new overtones that can create quite different effects (Kirschenbaum & Tomarken, 1982).

The ironic process theory suggests that a background process of monitoring of preconscious contents is instigated whenever the person intends to influence his or her own mental state, and that this process normally acts *against* the operating processes initiated to produce that state. The theory adds the provision, too, that the monitoring process is more robust in the face of distractions or stress than the operating process, and that for this reason monitoring creates its ironies primarily when cognitive loads arise. After all, if the monitoring process were indeed as powerful as the operating process, it would regularly overwhelm all attempts at mental control with extreme accessing of counterintentional thoughts and sensations. Of course, when certain of our attempts to be charming in a social situation create a series of gaffes, it may well seem that mental control is entirely perverse in this sense. Thankfully, however, the operating process typically "works" in many instances of mental control and thereby overpowers the ironic effects of monitoring.

There exist several lines of evidence that the ironic process theory is a useful way to conceptualize mental control. Studies of the instructed control of a variety of mental states indicate that when people are able to control a mental state at will, the imposition of a mental load during control not only undermines their control but typically creates ironic reversals of control (Wegner, 1994). So, for example, intended thought suppression under load creates exaggerated cognitive accessibility of the suppressed thought (Wegner & Erber, 1992) as well as exaggerated psychophysiological reactivity to the suppressed thought (Wegner, Shortt, Blake, & Page, 1990); intended mood control under load leads to greater accessibility of mood-relevant thoughts and self-reports consistent with a mood opposite the one intended (Wegner, Erber, & Zanakos, 1993); intended relaxation under load promotes arousal as indexed by skin conductance level (SCL; Wegner, Broome, & Blumberg, 1993); intended sleep under load produces wakefulness (Wegner, Ansfield, & Bowser, 1993); intended immobilization of a handheld pendulum under load produces movements in the counterintentional direction (Ansfield & Wegner, 1996); intended avoidance of sexist attitudes during a sentence-completion task under load increases sexist responding (Wegner, Erber, & Bowman, 1993).

One of the more telling ironies involves the act of concentration itself. According to the theory, your attempt to concentrate on the words in this sentence, for example, yields an operating process that increases the cognitive accessibility of the words—and a monitoring process that subtly enhances the accessibility of everything that is *not* this sentence. Normally, the operating process is more effective than the monitor and you therefore succeed in concentrating. Whenever distractions arise, however, the effortful operating process will be undermined while the monitoring process will not, and the cognitive accessibility of everything that is not the words will thus be heightened. By this reasoning, the mind wanders during concentration not because of some random process or weakness of will that simply leads you to attend less effectively, but rather because the monitoring of concentration failure makes that failure ironically inevitable (see Wegner, in press).

These and other ironic effects illustrate the usefulness of exploring both the operating processes and their accompanying monitoring processes in the study of mental control. Intended effects accrue from the strategies people use to exert control, but counterintentional effects also surface as a result of the more surreptitious processes that arise to monitor the effectiveness of these strategies. Although mental control seems to start out as a highly conscious and transparent exercise, it quickly breeds nonconscious and sometimes surprising mental consequences. The interplay of consciousness and mental control is our next topic.

### Consciousness and Control

Mental control would seem to be a process that requires a bit of consciousness. The attempt to overcome one's anger, for example, seems to depend on some form of conscious recognition of a discrepancy between the current mental state and a desired (nonangry) state, and perhaps as well a conscious resolve or intention to engage in the pursuit of control (cf. Tice & Baumeister, 1993). On occasion, too, the failure or success of control is also represented in awareness. We can sometimes tell that the anger welled up despite our desire to quell it, for instance, or that it subsided when we found something else to think about for a while. These glimpses of mental control that surface in awareness have convinced many commentators that control is a primary function of consciousness—the thing that awareness *does* (e.g., Baars, 1988; Johnson & Reeder, in press; Johnson-Laird, 1983; Oatley, 1988; Umiltà, 1988).

Despite these observations, awareness does not illuminate the whole mechanism of mental control from start to finish. There are even cases that look very much like mental control that seem to carry off without any awareness. Nonconscious defense mechanisms (Erdelyi, 1993; Vaillant, 1986) or adaptive illusions (Taylor, Wayment, & Collins, 1993), for example, may occur without significant awareness of the instigation or operation of the control. The hypnotic control of pain also seems, at least on its face, to be an effective mental control technique that does not involve awareness in its usual sense (e.g., Hilgard, 1986). Awareness in many of these cases would undermine control entirely. A person cannot repress a memory, for example, and continue to be aware of having done this if the repression is to be at all effective.

We believe that the main role of mental control is in mediating between preconscious sensory and memory inputs and their conscious representation. This mediation is depicted schematically in Figure 16.1, a block diagram of the basic mental control processes we have discussed thus far. As shown here, the mental control process involves a set of mechanisms that determine which potential inputs to consciousness will be admitted. Although items can be entered into consciousness through automatic processes

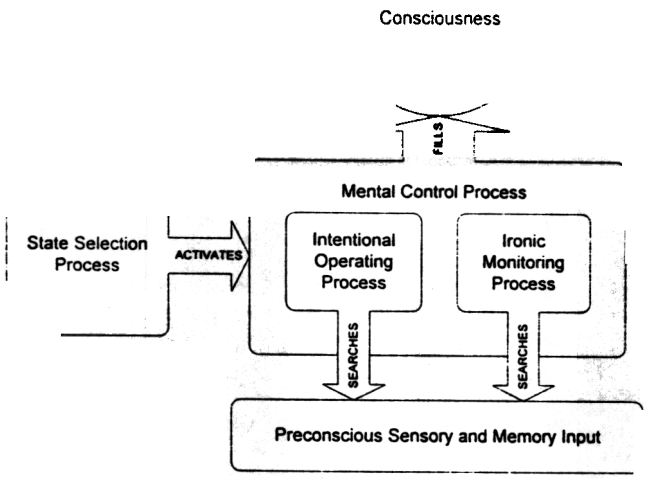


**FIGURE 16.1.** A model of the mental control process.

that bypass this mental control mechanism, the functioning of this mechanism acts to screen preconscious input in terms of its relevance to the mental control intention. Only items relevant to the selected state—because they are consistent with it and are sought by the operating process, or are inconsistent with it and are sought by the monitoring process—will be brought into consciousness by this system.

Now, even though mental control operates *on* consciousness, it is also the case that some of its functions operate *in* consciousness. In fact, we suspect that there is at least one point in the normal activity of mental control at which awareness is *required:* Awareness typically occurs at the juncture between the state selection process and the mental control process. We suspect that the state selection process is responsible for producing a conscious goal for the mind. Although the process of state selection itself—as noted earlier—is often automatic and unconscious, the product of this process is the emergence of a goal in consciousness. Thoughts desirous of mental control pop to mind: "Let me not think of that!" or "I wish I could sleep" or "I hope I can stop being nervous" or "I need to concentrate." These realizations are the conscious results of the state selection process, and are the conscious beginnings of the mental control process. In essence, then, there is a conscious bridge from state selection to mental control that occurs with the apprehension of the selected state. Mental control normally occurs with a *moment of awareness.*

The mental control process that ensues can also surface in consciousness, but the rules of this emergence are complex. This is because the operating and monitoring processes invoked during mental control each have consequences for consciousness beyond their basic function of searching for items to press into consciousness. The operating process itself is largely conscious, in that it involves a conscious, voluntary search for thoughts and sensations consistent with the desired mental state. The person might be quite conscious of trying to discover some happy thoughts in service of attaining a happy mood, for example, or be aware of finding distracters as a way of avoiding the painful thought of a regrettable event. Consciousness of the mental control operations might expand initially to review the different possible operating strategies (Should I try to avoid sadness by whistling a happy tune or by imagining my enemy falling down a well?) and then settle on the chosen one. Eventually, consciousness of the operating process could well subside as distracting thoughts and sensations come to mind and enter consciousness themselves. The operating process does not remember itself in the sense that it retains a sense of its own direction in awareness.

The directedness of mental control comes from the constant influence of the monitoring process. The monitoring process that looks for the failure of the operating process remains vigilant for the conscious appearance of items inconsistent with the desired mental state. This vigilance enhances the likelihood that such items will indeed appear in consciousness—so the monitor, too, has effects that can enter awareness. The conscious memory of control provided by the monitoring process is curious, however, in that it focuses entirely on the failure of control. Items that are inconsistent with the intended state of mind thus pop into awareness during the exercise of control, bidden to intrude by the ever-present monitor. Such intrusions should only cease when the mental control effort is terminated. That is, when the state selection process rescinds the conscious intention to engage in mental control, the monitoring process ceases its ironic functioning.

This portrayal of mental control suggests that it begins with a moment of awareness, and then continues to occupy or influence awareness in various ways. In this sense, mental control becomes a major inhabitant of consciousness whenever it is initiated. Even when the operating process succeeds in creating a desired mental state—to the point that the person enters that state fully and becomes absorbed in it—the monitor stands ready to reintroduce the mental control goal to consciousness whenever it discovers an item that is inconsistent with the desired state of mind. A person might well have used mental control successfully to become calm in the face of a threatening audience, for example, and might now be idly chatting with them only to have the monitoring process thrust an image of a potentially serious embarrassment into mind. At this point, mental control would once again intrude on consciousness. The operating process would be started once more and the effort of mental control would begin again as the person renewed the conscious search for calming thoughts and sensations.

This analysis of consciousness in the mental control process should apply to a wide range of the apparently voluntary attempts individuals make to influence their minds. Still, it fails to explicate the cases in which there are mental control-like mechanisms that seem to escape awareness. Such unconscious control mechanisms are often the focus of clinical and popular interest because they seem to involve self-deception, repression, or other forms of

psychological blindness. Although these cases often are open to multiple interpretations that call their veracity into question (cf. Erdelyi, 1985, 1993; Holmes, 1974, 1990; Loftus, 1993; Wegner, 1992), they are so interesting and so widely treated in the popular press that it is worth thinking about how they might be accounted for in the present framework. When concentration camp survivors forget many years later some of the atrocities they reported just after their experience (Wagenaar & Groeneweg, 1990), for example, or childhood sexual abuse victims forget as adults the incidents recorded in their hospital records (Williams, 1995), it is tempting to wonder whether a conscious mental control process might be responsible.

There seem to be two ways in which cases of mental control might occur without the apparent benefit of consciousness. First, there may be *control forgetting;* the contents of the moment of awareness that links state selection with mental control could be forgotten. Forgetting of such contents could occur through simple disuse (Bjork & Bjork, 1992) or perhaps through some form of (unconscious) retrieval inhibition (Bjork, 1989). Second, there may occur the *automatization of control:* the moment of awareness could be eliminated if the specific mental control mechanism is repeatedly practiced and so automatized. The automatization of mental processes can reduce conscious access to steps in the sequence that were previously conscious (Bryan & Harter, 1899; Jastrow, 1906; Schmidt, 1987; Vallacher & Wegner, 1985).

To understand how these instances of unconscious mental control might arise, it is useful to consider an example. Suppose that a woman who has suffered a traumatic experience is later found to have no recall of that experience and no conscious emotional reaction to its mention—and indeed, even denies having tried to put these things out of mind. Such unconscious repression is often attributed to forces quite outside those that might be identified with conscious mental control. However, given the current model it is possible to suggest that such an event could arise as a result of either of the two paths to unconscious mental control.

In the case of control forgetting, a form of unconscious mental control could occur if the woman were unable to retrieve the memory trace of that moment of awareness in which the desire to stop thinking about the trauma occurred. This does not seem to be the sort of memory item that would be forgotten through disuse, as rumination on this topic would seem very likely. It might well be, however, that the conscious desire not to think about or experience this memory would promote retrieval inhibition for the control attempt. Quite aside from any thought suppression, mental control, or retrieval inhibition processes aimed at the traumatic memory per se, there could be specific retrieval inhibition targeted toward the moment of awareness in the mental control sequence. The moment of awareness produced by the state selection process would likely be quite painful in itself—a realization of the full and unwanted emotional impact of the trauma. With the forgetting of the content of this moment, the mental control process that was set in motion would still be free to carry out its task. The operating process and monitoring process it created could continue the task of suppressing trauma-linked thoughts and emotions, all the while without leaving the woman with a conscious sense of having done this on purpose.

This sort of control forgetting could happen in a relatively short span of time. The automatization of control, on the other hand, would require considerable time and repetition to produce its version of unconscious mental control. The woman might experience frequent recurrent intrusive images of her traumatic experience, for example, and each time reject them from mind and try as well to overcome the emotions they prompt. The first few days or nights of this might be resoundingly ineffective, but over time the moment of awareness could become a lesser and lesser part of the mental control sequence. The operating process could also become automatized in this event, so to lose its normally conscious representation. The return of any painful thoughts could thus prompt habitual and unconscious functioning of a mental control process that is nevertheless quite effective (cf. Kelly & Kahn, 1994). Such automatization could also create mental control processes that are ineffective, bizarre, or that seem to promote inappropriate mental states. If occurrences of unwanted mental states can prompt habitual responses that are themselves largely inaccessible and immutable, these could be troublesome indeed. Although automatization may lead to the streamlining of a process such as mental control, at the same time it may reduce its flexibility and adaptability (Reason, 1979).

Little research is available at this point to illuminate these sorts of unconscious mental control. We have sketched out these scenarios to suggest some ways in which such phenomena, traditionally opaque to psychological investigation, might be examined in terms of their link to our model of the voluntary control of mind. These possibilities strike us as exciting and worthy of investigation. It may be that working to understand unconscious mental control processes as exceptions to a general model of conscious mental control will allow us to uncover varieties of control, both effective ones and ones gone awry, that might not otherwise seem like forms of mental control at all.

## Strategies of Mental Control

The ways in which people attempt to gain mental control are highly varied. Almost any behavior and almost any conscious mental change could conceivably be created by an operating process in the pursuit of mental control. To make some sense of this potential complexity, it is important to understand several distinctions among different forms of mental control strategy.

### *Mental and Situational Strategies*

Most of the mental control strategies we have discussed thus far are things that a person could do sitting alone in a room. From this perch, for example, a person could attempt to focus attention on a Handbook chapter, to think of things that induce sleep, or to gain self-confidence by reviewing past successes. These are all strategies that are explicitly mental—they can occur entirely in the mind. These forms of mental control have been called "internal" (Schneider,

1993; Wegner, 1989) and appear to require mental capacity or effort for their successful operation.

There are other strategies that also appear fully planful and that can have intentional effects on the mind, but that involve the behavioral manipulation of situations as part of the control operation. These forms of "external" (Schneider, 1993) or "remote" (Wegner, 1989) control involve the orchestration of environmental changes that increase the likelihood that desired mental states will be achieved. So, for instance, when someone attempts to suppress thoughts of a past traumatic event by moving away from the area in which the event occurred, or perhaps by throwing out items that serve as reminders of the event, mental control occurs through the mediation of environmental manipulation. Behaviors such as going alone to a quiet place to study, finding a good position in which to sleep, or taking an alcoholic drink to relax, all fit this situation-manipulation pattern. In essence, situation control modifies the sensations to which the mind is subsequently subject and so can supplant the application of mental strategies.

The two forms of control may be used in concert, and they may also be introduced sequentially in service of the same mental goal. The person who finds a particular scene in a horror film to be repugnant, for instance, might turn away for a moment (a situational strategy), might try to think of something else (a mental strategy), or might do one and then the other. Often, knowing that a person has chosen some situational strategy can serve as an observable indication that a mental strategy may be functioning as well (Wegner & Pennebaker, 1993a).

The great benefit of situational strategies, however, is that they can often preempt the deployment of a mental strategy. The intention to exert situational control is not the same as the intention to engage in mental control, and its implementation through mental control processes will differ. The intent to begin situational control—such as the plan to move away from the site of a trauma, for example—produces an operating process that oversees the behavior of moving, and a monitoring process that examines whether there has been a failure to move. This situational control intention does not produce operating and monitoring processes that implement the intended mental control. There is no operation formed to try not to think about the trauma, and there is no ironic monitor formed to stay wary of trauma-relevant thoughts or emotions. When mental control is given over to the environment, the intentional imposition of control itself may well be forgotten. Because of this, the ironic effects of mental control do not occur with situational control. Although situational strategies for mental control may have their own disadvantages (cf. Wegner, 1989), they are preferable to mental strategies for mental control insofar as they eliminate the inherent irony of the mental control system.

### *Approach and Avoidance Strategies*

A distinction must be made between mental control strategies aimed at approaching a state of mind versus those directed toward the avoidance of a state. This distinction is clear at the level of the verbal identifications people offer for their mental control activities. One can desire to be happy, for example, or not to be sad. According to the ironic process theory (Wegner, 1994), the mental approach and avoidance of mental states are both translated into cognitive search strategies prior to their performance. So, the desire to be happy yields operating processes aimed at accessing happiness-relevant cognitive contents—happy thoughts and environmental and bodily sensations associated with happiness. The desire not to be sad, then, although initially phrased as an avoidance plan, is translated for performance into a search for nonsad thoughts and sensations. That is, avoidance strategies are reinterpreted as approach strategies when enacted. In essence, this view says the mind cannot avoid a mental state by attempting to do just that. Rather, it accomplishes avoidance by approaching mental contents inconsistent with the unwanted state. Because mental states presumably obviate one another, the avoidance of a state is actually accomplished by the achievement of *any* other state.

The distinction between approach and avoidance strategies can be understood, in this light, as a difference in the *framing* of the search plan (cf. Rugg, 1941; Tversky & Kahneman, 1981). Approach searches are framed in terms of the desired state. Thus, during concentration the operating process tries to approach the item on which the person desires to concentrate and the monitoring process tries to approach any items that are not the target item. Avoidance searches are framed in terms of the undesired state. During thought suppression, for instance, the operating process tries to approach items that are not the target item, whereas the monitoring process tries to approach the target item.

These framing issues become particularly noteworthy when mental states can be framed in seemingly parallel approach and avoidance terms. It would seem equivalent to say that a person who desires to be relaxed, for example, desires not to be anxious. But these framings differ subtly in their implications for the search processes that will be implemented in mental control. To create relaxation, the operating process would seek relaxing mental contents, and the monitoring process would seek failures to create such contents. The monitored failures could range from anxiety-producing contents to a wide variety of neutral or relaxation-irrelevant contents. To avoid anxiety, on the other hand, nonanxious mental contents would be needed. This would require an operating process seeking both relaxing contents and neutral or relaxation-irrelevant contents, and a monitoring process seeking only anxiety-relevant contents.

These differences are not so subtle when it is recognized that during any mental load, the functioning of the operating process is likely to be interrupted, thus to thrust the search contents of the ironic monitoring process into consciousness. With mental load or stress, the person trying to relax will therefore be inclined to access both nonrelaxing thoughts or sensations and a wide range of thoughts and sensations that are irrelevant to relaxation. This might lead to only a small increase in anxiousness. In contrast, mental load or stress will lead the person who is trying not to be anxious specifically to focus only on anxiety-relevant thoughts and sensations. This, then, is likely to produce marked increments in anxiety.

The experimental study of these framing differences is just beginning. Wegner, Erber, and Zanakos (1993) have found some evidence for these ideas in studies of the framing of mood control. They found a tendency for stronger ironic effects when people were trying to suppress a state (e.g., don't be sad) than when people were trying to create its opposite (e.g., be happy). This effect also occurs in the direction of attention (Wegner, in press): people find it far more difficult to suppress a thought than to concentrate on a thought, apparently because the ironic process involved in concentration searches for many items (all nontargets), whereas the ironic process involved in suppression searches for just one item (the unwanted thought). This suggests that issues of the relative size of the search ranges of the operating and monitoring processes may often be important for predicting the outcome of mental control (see Wegner, 1994).

In practice, however, the simple distinction between approach and avoidance strategies may be quite a bit more complicated even than this. The ironic process theory suggests that under mental load, approaching any mental state produces a process that promotes avoidance of that state. And avoiding a mental state generates an ironic process that approaches that state. If the approach and avoidance strategies can sometimes actually switch consequences in this ironic way, it is no wonder that commentators sometimes recommend that people reverse or rescind mental control to exert it more strenuously (Frankl, 1969; Pennebaker, 1993; Shaw, 1988).

### *Simple and Compound Strategies*

Mental control intentions often are linked. For example, instead of just trying not to think of a white bear, a person might try to stop thinking of a white bear by thinking of a red Volkswagen (Wegner, Schneider, Carter, & White, 1987). The joining of two simple mental control activities into a compound mental control strategy produces a hybrid of sorts that behaves in special ways.

In an initial analysis of this point, Wegner and Schneider (1989) described the compound strategies that occur when a person links concentration on one item with suppression of another. They suggested that the attempt to suppress a thought by concentrating on a particular distracter—the strategy most people call "distraction" (Cioffi, 1993)—should be distinguished from suppression per se. Wegner and Schneider proposed that this case might be labeled *primary suppression with auxiliary concentration* because the person's intention is to suppress by concentrating. Wegner and Schneider (1989) also noted a related compound mental control intention that is complementary to this one. Sometimes people suppress a thought in hopes of being able to concentrate on something else. Such *primary concentration with auxiliary suppression* is the task investigated frequently by researchers interested in selective attention (e.g., Bjork & Landauer, 1979; Gernsbacher & Faust, 1991; Tipper et al., 1991). In the first case, for example, the person avoids thinking about an upcoming dentist appointment by reading a book; in the second case, he or she might focus on reading a book by avoiding thoughts of an upcoming dentist appointment.

Primary suppression with auxiliary concentration and primary concentration with auxiliary suppression have the same basic operating and monitoring processes. In each case, the operating process searches for the concentration target and the monitor searches for items that are not that target (including the suppression target). The difference between these cases seems to be in the way they deteriorate or change. In primary suppression, the point is to suppress, so different concentration strategies might be used if the present one fails. If the book is not absorbing enough to keep the person's mind off the dentist, he or she might watch TV or call a friend on the phone. In primary concentration, in turn, the point is to concentrate, so different suppression strategies might be substituted for the current one if it seems not to be working. If avoiding thoughts of the dentist is insufficient to promote successful concentration on the book—as the person keeps marching off to the refrigerator every few minutes—the next choice might be not to think about food. Primary suppression with auxiliary concentration decays into simple suppression; primary concentration with auxiliary suppression decays into simple concentration.

An awareness of compound mental control strategies opens up a detailed and potentially important language for talking about mental control. It is not enough to say, for example, that someone is approaching some mental state or is avoiding some mental state. We may also ask *how* this is being done—whether the mental control is being attempted simply, or is accompanied by some other control intention that is being used as a means toward the end of the desired state. The realization that people will often fashion specific compound mental control intentions—and that these intentions can yield very different operating and monitoring processes—suggests that we must be careful to examine just how people represent any particular instance of mental control to themselves.

We now know, for example, that the simple suppression of pain increases the severity of subsequent reports of experienced pain relative to distraction from pain (Cioffi & Holloway, 1993). This and related findings (e.g., Wegner, Schneider, Knutson, & McMahon, 1991; Wenzlaff, Wegner, & Klein, 1991) indicate that simple and compound mental control strategies can have predictably different influences, not only during the exercise of mental control but also afterward.

### *Interpretive Strategies*

It is tempting to conclude from the examples of mental control we have reviewed to this point that mental strategies usually involve the direction of attention toward or away from particular objects—targets, ideas, distracters, or the like. Mental control strategies should be defined more broadly, however, in the sense that they influence whether or not some range of experience enters conscious attention. Strategies of mental control can involve various filters that are applied to the attention process, in other words, and these may not involve specific objects. Sometimes people control their minds by trying to attend in a particular way or from a certain perspective. When this happens, mental control takes the form of a preferred

*interpretive set.* Mental control strategies are not always the mind's equivalent of turning one's eyes toward or away from a stimulus. They sometimes are more like mentally donning colored glasses.

Consider, for example, a man who is hospitalized for a heart condition and is deeply worried about his health. This is not the sort of worry that can be escaped easily through suppression or even distraction, so he may approach it instead through a general plan to reinterpret health-relevant thoughts and sensations. Such a plan could take many forms. It might be possible, for example, to view health-related worries as helpful reminders to perform heart-healthy behaviors from now on; the man could take his symptoms and concerns as signs that he is now ready to turn over a new leaf and begin eating and exercising correctly. Alternatively, he might interpret his worries as indications of what his hateful, shrewish spouse has done to him; he could chalk each pain or anxious thought up to her, so to drain them of their more immediate and alarming meaning. Another possibility—probably more easily adopted before the hospitalization—would be to view the symptoms as tokens of some minor ailment. There are many ways in which people may reach a peaceful rapprochement with unwelcome mental states by finding an acceptable meaning in them (Tait & Silver, 1989).

Many of these interpretive strategies have been documented in the clinical literature as forms of denial or psychological defense (e.g., Breznitz, 1983). Others have been celebrated as creative approaches to reframing psychological problems (e.g., Watzlawick, Weakland, & Fisch, 1974). It is probably most accurate to view interpretive strategies as mental control techniques that can be used in many cases when the direct reorientation of attention may itself be difficult. So, for example, although a child might find it difficult to ignore the temptation of a crunchy, salty pretzel in plain sight, thinking about the pretzel as a "long, thin brown log" helps the child to delay eating (Mischel & Baker, 1975; Mischel, Shoda, & Rodriguez, 1989). Presumably, this delay in eating is due to a form of mental control that occurs through interpretive transformation.

The use of interpretation as a mental control strategy usually involves thinking of something "as though" it were something else, or "as if" it had some other identity. Thinking of a misfortune as an opportunity, viewing the plight of a victim as though it were one's own, or thinking of a drink of alcohol as letting down one's friends and family can allow the individual to exercise control guided by a specific search criterion that does not take the form of a specific approach or avoidance. In this sense, interpretive strategies for mental control may be thought of as varieties of the compound strategies mentioned earlier. Their unique aspect seems to be the person's specific knowledge at the point of application that they are somehow untrue or counterfactual, and that they will be used to guide the mental control operating process nonetheless.

### *Chosen Strategies*

A further distinction is worth making in this context. A person's freely chosen mental control strategies may have effects that are quite unlike imposed circumstances that would, on their surface, appear to resemble them. One familiar set of such effects follows from cognitive dissonance research (e.g., Brehm & Cohen, 1962). This work has shown us that chosen activities have different effects on attitudes and other internal states than imposed activities, so we must recognize that self-imposed mental controls will have certain predictable effects that depart from externally imposed influences. For example, chosen mental states may be more likely to be attributed to the causal influence of the self, to be accompanied by supportive attitudes, to induce permanent change, and to serve as the basis for action (Wenzlaff, 1993b).

Other subtle differences exist between mental control strategies and the imposed circumstances that superficially resemble them. Consider, for example, the unchosen imposition of distraction on a person who is attempting to suppress a thought. It might seem that such a distraction would facilitate suppression, as there is considerable evidence indicating that the presence of such absorbing stimulation could aid in the avoidance of unwanted thoughts (e.g., Mischel & Baker, 1975; Nolen-Hoeksema, 1993).

Yet in research by Wegner and Erber (1992) and by Wegner, Erber, and Zanakos (1993), it has been found that the imposition of mental loads undermines thought suppression when such suppression is indexed by measures of cognitive accessibility. In a version of the Stroop paradigm, for example, the cognitive accessibility of a thought was assessed in terms of a subject's slowness to name the color in which words relevant to that thought are printed. Subjects in these studies who were trying not to think of some word or event, and who were exposed to a cognitive load in the form of a digit rehearsal task, showed greater accessibility of that word or event than subjects who were trying to think of it. Such hyperaccessibility of suppressed thoughts does not indicate that the mental loads in these studies were serving as very effective distracters.

It may be that when distracters are specifically chosen for use in mental control, they take on functions they do not perform when they are simply imposed. When a person chooses, for example, to think about an upcoming rodeo in the hope of suppressing thoughts of a poor exam score in school, the distracter may be useful. When that same person is disturbed by the ongoing rodeo during an attempt to suppress thoughts of the exam score, the distracter may actually hinder suppression. It could be that imposed mental loads act to distract us from our distracters, thus undermining mental control. Additional research is needed to examine whether these potential effects of mental control choice indeed follow the patterns these basic observations lead us to expect.

## MENTAL CONTROL AND EMOTION

In the changing climate of our emotional lives, we sometimes experience positive moods that make us want to linger and savor the feelings, whereas at other times we encounter negative moods that prompt efforts to escape. We do not possess an emotion thermostat that we can simply adjust to achieve and maintain a desired mood. We must rely instead on the manipulation of some intervening

process that in turn affects emotions. In this section, we explore the mediational role that thoughts play in emotions and the tactics and consequences of the mental control of mood. We begin by examining the role of thought in emotion, then turn our attention to common but ineffective mental control strategies, and finally consider more promising approaches to mood regulation.

### The Emotional Impact of Thoughts

What is it about reading a good novel that stirs our emotions? Unless one is prone to become emotional at the sight of a printed page, we have to conclude that it is the thoughts invoked by the story that produce the feelings. Longfellow (1922) recognized the emotional impact of cognition when he wrote, "A thought often makes us hotter than a fire." Not only is it intuitively plausible that thoughts can generate emotional "heat," but there is also an extensive body of scientific data and theory to support the idea that cognitions influence emotions. A brief consideration of this evidence will provide a backdrop and rationale for our discussion of mental control and mood.

Numerous studies have shown that what we think has a direct impact on how we feel. Investigators have employed a number of different mood induction procedures that alter the content of subjects' thoughts, thereby leading to corresponding mood changes. For example, predictable emotional shifts have occurred when subjects read and contemplate a series of emotionally charged statements (Velten, 1968), recall pleasant or unpleasant experiences (Wright & Mischel, 1982), view happy or sad films (Isen & Gorgoglione, 1983), listen to upbeat or somber music (Wenzlaff, Wegner, & Klein, 1991), or receive positive or negative feedback (Clark & Waddell, 1983).

The results of these experimental mood manipulations are consistent with the general finding that emotionally disturbed individuals are plagued by intrusive, negative thoughts. For example, research has documented that depressed individuals are particularly apt to report thoughts that are unfavorable about themselves, the world, and the future (e.g., Beck, 1976). Analyses of depressed individuals' stream-of-consciousness reports indicate a preponderance of negative, recurring thoughts (e.g., Wenzlaff, Wegner, & Roper, 1988) that depressed individuals themselves acknowledge as a primary contributor to their unhappy state (e.g., Wenzlaff, 1991). Negative, unwanted thoughts also dominate the mental lives of individuals experiencing troublesome anxiety (Eysenck, 1992), anger (Tice & Baumeister, 1993), jealousy (White, 1989), and a host of other unpleasant emotions.

Additional evidence for the emotional impact of thoughts comes from research testing the idea that physiological arousal is emotionally nonspecific; it is the evaluation of the physical feedback that determines the emotional response. In support of this notion, the classic research of Schachter and Singer (1962) found that the moods of subjects who were given a stimulant drug and uninformed about its effects were largely determined by the emotional cues available in the situation. An informed group of subjects did not show this type of context-dependent emotional reaction. The investigators claimed that, unlike the uninformed group, the informed group had an obvious explanation for their arousal and were not compelled to attribute it to emotions arising from other situational factors.

Other studies have found similar support for the misattribution of arousal hypothesis. For example, investigators have shown that misattribution of arousal to neutral cues can produce increased pain tolerance (Nisbett & Schachter, 1966), reduced fear of shock (e.g., Ross, Rodin, & Zimbardo, 1969), less test anxiety (e.g., Weiner & Samuel, 1975), diminished aggression following provocation (Harris & Huang, 1974), less dissonance in a forced compliance paradigm (e.g., Zanna & Cooper, 1974), and even more cheating—presumably because of a reduction in guilt feelings (e.g., Dienstbier & Munter, 1971; for more complete reviews, see Cotton, 1981; Leventhal & Tomarken, 1986; Reisenzein, 1983).

Another line of research is also relevant to the idea that attributions of arousal can influence emotions. This research is based on excitation transfer theory (Zillmann, 1971) which predicts that individuals sometimes mistakenly attribute residual arousal from a prior situation to a subsequent one, thereby leading to an intensification of the affect associated with the latter situation. For example, investigators have shown that residual excitation from physical exertion can intensify feelings of anger and aggressive behavior (e.g., Zillmann, Katcher, & Milavsky, 1972) and heighten sexual excitement (Cantor, Zillmann, & Bryant, 1975). Other studies have found that residual sexual arousal can promote aggression (e.g., Zillmann, 1971) and the enjoyment of music (Cantor & Zillmann, 1973); and that residual excitation from humor can enhance aggression (Mueller & Donnerstein, 1977; for more complete reviews, see Zillmann, 1978, 1983; Reisenzein, 1983).

Just as appraisals of physiological arousal can affect emotions, so can evaluations of personal experiences. A number of theorists claim that our emotional reactions hinge in large measure on our judgments of the positivity, importance, relevance, antecedents, and implications of personal events. From this perspective, emotional problems are likely to result when individuals focus excessively on the negative aspects of their experiences, disproportionately attribute failures to personal shortcomings, or believe they are helpless to effect positive changes (e.g., Abramson, Seligman, & Teasdale, 1978; Alloy, Abramson, Metalsky, & Hartlage, 1988; Beck, 1967).

Considerable empirical evidence supports the idea that the emotional consequences of events depend on the nature of the appraisal process (for reviews, see Lazarus, 1990, 1991; Smith, 1991). From this perspective, then, it is understandable that people can have very different emotional reactions to the same event. For example, being denied a job promotion may precipitate depression if one perceives it as a sign of personal inadequacy, anger if one believes it is unfair, or even relief if one were looking for an excuse to quit.

Taken together, the research indicates that thoughts mediate emotional reactions. Although cognition may be sufficient to cause mood states, there is some debate as to whether they are necessary precursors to emotions. The central questions here are whether emotional states can

arise in the absence of cognitive mediation: and if so, what are the implications of this noncognitive emotional process for the mental control of moods? We address these issues next.

### Inadvertent Emotion

The idea that emotions can be evoked inadvertently—with virtually no cognitive processing—was first suggested in a mere exposure experiment (Kunst-Wilson & Zajonc, 1980) in which subjects reported a preference for stimuli that had previously been subliminally presented and were not recognized as having been seen (also see Murphy & Zajonc, 1993; Zajonc, 1980). Presumably, subjects developed liking for the subliminal material because of familiarity, even though they were unaware of the prior presentation. This finding raises the possibility that emotions can arise in the absence of cognitive mediation. Investigators, in fact, have identified a variety of potential noncognitive sources of emotion activation.

Research on the relationship between neurological functioning and emotion has suggested that neural systems can sometimes activate emotions independent of cognition. Antidepressant and antianxiety drugs have been found to improve some patients' moods (Gray, 1982; Redmond, 1985; Thompson, 1988); exposure to certain chemicals (e.g., carbon dioxide, yohimbine, amphetamine) can induce anxiety (for a review, see Charney & Redmond, 1983); and electrical stimulation of different brain structures can produce subjective experiences and behavioral signs of joy, pleasure, anger, and fear (Delgado, 1969; Flynn, 1967; Hess, 1957; Penfield, 1958).

Sensorimotor systems have also been implicated in the nonconscious activation of emotion. For example, a number of investigators have found subjective emotional changes often occur when subjects alter their facial expressions (see Adelmann & Zajonc, 1989) or their body posture (Duclos, Laird, Schneider, Sexter, Stern, & Van Lighton, 1989). Although some of these studies did not adequately control for cognitive influences, experiments designed to eliminate cognitive mediators have yielded similar results (e.g., Strack, Martin, & Stepper, 1988). Finally, emotional reactions have been experimentally elicited by exposure to different tastes (Fox & Davidson, 1986; Rosenstein & Oster, 1988) and odors (Ehrlichman & Bastone, 1992), even though odors have a weak relationship to verbal labels and cognition (Engen, 1987).

The evidence reviewed here indicates that both cognitive and noncognitive factors can activate emotions. Although controlled laboratory procedures have enabled researchers to examine—with some modicum of precision—the independent emotional effects of thoughts and physiological states, it would be misguided to overlook their synergistic relationship. Thoughts, emotions, and physiology share an interactive relationship with each exerting reciprocal influences. Changing one element of this interactive process could alter the entire system and provide us with a means of achieving desirable mood states.

Thoughts are the most obvious and expedient target for such a strategic intervention. After all, both physiological and subjective feeling states can be exceedingly difficult to change without some type of conscious, thoughtful effort. Thoughts, on the other hand, can be identified, inspected, and redirected—or at least this is what we would like. Through mental control, then, we can potentially gain some control over the forces that produce emotions. In the next section, we examine the effectiveness and unforeseen consequences of the mental strategies people commonly employ in an attempt to control their moods.

### Ironic Effects in the Mental Control of Negative Moods

Although there are some instances when we might want to inhibit or change positive moods (Hochschild, 1983; Parrott, 1993; Wegner & Erber, 1993), we are most likely to try to control our emotions when they are negative. However, judging by current surveys that indicate at least 40 million adult Americans have persistent problems with negative thoughts and emotions (Regier et al., 1993), the control of unwanted moods can be a difficult enterprise. A naive explanation for this alarming number of emotionally distraught individuals is that they simply are not trying hard enough to rectify their moods. Yet, just the opposite appears to be true. Not only do depressed and anxious individuals report being more preoccupied with improving their moods than do their normal counterparts, but they also report expending more energy and time in that pursuit (Wenzlaff & Delgado, 1993). This fact highlights an obvious paradox: Those individuals who devote the most time and attention to repairing their moods seem to be the ones most likely to suffer from persistent emotional problems.

One explanation for this apparent anomaly is that depressed and anxious individuals may employ counterproductive control strategies that actually help foster the thoughts that are causing their negative emotions. The suppression of negative thoughts is one of the most common strategies for mood control reported by depressed and anxious individuals (Wenzlaff & Delgado, 1993). As we have seen, however, this mental control tactic can have unforeseen negative consequences. This approach involves the activation of both an intentional operating process that searches for the mental contents that will yield the desired state (i.e., positive thoughts or the absence of negative ones), and an ironic monitoring process that searches for mental contents that signal failure to achieve the desired state.

The monitoring process typically proceeds automatically and out of awareness, making itself known only to alert the individual to the presence of unwanted thoughts, and thereby to reinstate the intentional operating system. The monitoring process is ironic because it enhances the accessibility of the unwanted mental states over which it maintains vigilance. In normal interactions between operating and monitoring processes, however, the ironic monitor is relatively less effective than the conscious operator in introducing items to consciousness. The normal prepotence of the intentional operating process can be undermined when attentional capacity is diminished, thus enabling the ironic monitor to exert undue influence. This situation occurs because the operating system requires effortful

processing and is thus adversely affected by attentional demands, whereas the monitoring process is more automatic and less dependent on cognitive resources.

The emotional consequences of diminished cognitive resources on the mental control of emotions was demonstrated in a pair of experiments by Wegner, Erber, and Zanakos (1993). In the first experiment, subjects reminiscing about a happy or sad event were asked to make their mood positive, were given no instructions, or were asked to make their mood negative. Subjects attempting mood control without an imposed cognitive load were successful, whereas those who attempted control while rehearsing a 9-digit number not only failed to control their moods but showed self-reported emotional change opposite the mood they intended to create. In the second experiment, subjects attempting to control mood-related thoughts under cognitive load showed increased accessibility of those thoughts in a modified version of the Stroop color naming task.

The ability of the monitoring process to exert these ironic emotional effects when cognitive resources are diminished may provide one explanation for the difficulty depressed and anxious individuals have in controlling their moods. There is evidence that negative mood states, in and of themselves, occupy cognitive resources that could otherwise be employed for effortful cognitive aims. The diminution of cognitive capacity caused by negative moods would reduce the effectiveness of the intentional operating system and enhance the influence of the automatic monitoring process, thereby leading to the perpetuation or increase of unwanted thoughts.

Considerable research indicates that depressed and anxious people have fewer cognitive resources available for effortful tasks than do their normal counterparts. Depressed individuals generally perform more poorly than nondepressed individuals on tasks requiring effortful cognitive processing such as problem solving (Braff & Beck, 1974; Dobson & Dobson, 1981; Price, Tryon, & Raps, 1978), learning (Cole & Zarit, 1984; Coughlan & Hollows, 1984; Hasher & Zacks, 1979; Robertson & Taylor, 1985), and performance speed (Berndt & Berndt, 1980; Weckowicz, Tam, Bay, Collier, & Beelen, 1981). However, on tasks that are believed to involve automatic processes (e.g., recognition memory, spatial location performance, self-relevant information processing) depressed individuals perform as well as their nondepressed counterparts (for a review see Hartlage, Alloy, Vázquez, & Dykman, 1993). Similarly, anxiety is associated with impaired performance on effortful tasks but not on easy or automatic ones (Eysenck, 1982; Ingram & Kendall, 1987; Kahneman, 1973; for a review, see Eysenck, 1992).

Thus, because of their emotional state, depressed and anxious people appear to have diminished cognitive resources undermining their ability to perform effortful tasks. This situation is analogous to the cognitive load conditions in experiments examining the relative influence of the operating and monitoring processes involved in mental control. We have seen that when cognitive resources are in short supply the monitoring process is most likely to exert ironic effects. The depletion of cognitive resources associated with depression and anxiety would undermine mental control efforts by impairing the conscious operating process and intensifying the impact of the ironic monitoring system. This state of affairs should serve to increase the accessibility of the negative thoughts depressed and anxious people are trying to avoid.

In addition to the reduction of cognitive resources, there are at least two other reasons why the ironic effects of mental control would be especially likely to obtain in depressive and anxious moods. One is that depressed or anxious individuals have become so well practiced at negative thinking that it becomes an automatic tendency. When a person consistently dwells on negative thoughts or is repeatedly confronted with them as the result of a series of unfortunate experiences, they may become well practiced and develop an automatic quality (Bargh & Tota, 1988; Beck, 1967; Beck & Emery, 1985; Hartlage, Alloy, Vázuez, & Dykman, 1993). Once a pattern of thinking has become automated, it is easily activated—sometimes without intention—and requires a special degree of effort to inhibit (Bargh, 1989; Gilbert, 1989; Posner & Snyder, 1975; Shiffrin, 1988). Automatic negative thoughts are especially likely to display these properties because the accompanying negative mood state serves to make mood-congruent thoughts more accessible (e.g., Bower, 1981; Isen, 1984). Thus, we would expect that the well-practiced negative thoughts of depressed and anxious individuals would tend to occur spontaneously and be difficult to inhibit. The automatic nature of negative thoughts would undermine depressed and anxious individuals' mental control efforts because positive thoughts (i.e., the preferred mental state) would be less accessible than if the person's mood was positive, whereas negative cognitions (i.e., the monitored thoughts) would be relatively more accessible. This situation should cause the monitoring process to introduce negative thoughts to consciousness more often than it otherwise would.

Another reason ironic effects are especially likely to occur when people are depressed or anxious involves the enhanced self-focus that is associated with negative moods. Numerous investigators have found that depressed and anxious individuals experience a heightened level of self-awareness (Greenberg & Pyszczynski, 1986; Ingram & Smith, 1984; Sarason, 1975; Wine, 1980; for a review, see Pyszczynski, Hamilton, Greenberg, & Becker, 1991). Enhanced self-focus has been associated with increased accessibility of self-referent information (e.g., Carver & Scheier, 1981; Hull & Levy, 1979; Turner, 1978), the tendency to compare oneself to ideal standards (e.g., Duval & Wicklund, 1972; Wicklund, 1975), and the intensification of negative affect (Gibbons, Smith, Ingram, Pearce, Brehm, & Schroeder, 1985; Scheier, 1976; Scheier, Carver, & Gibbons, 1981). Self-focus, then, could be expected to undermine the mental control of negative moods by (1) increasing the person's awareness of unappiness, (2) making the person more aware of the discrepancy between current and desired states, and (3) intensifying the very emotions the person is trying to combat. Obviously, the self-awareness induced by negative moods would undermine mood-incongruent operating systems and strengthen mood-congruent monitoring processes.

There appear to be, then, several factors that are especially likely to thwart depressed or anxious individuals' attempts to control their emotions. These include the ironic effects of thought suppression, diminished cognitive resources, enhanced accessibility of negative thoughts, and increased self-focus. These impediments to the control of negative emotions should have the observable effect of inhibiting the production of positive thoughts and facilitating the accessibility of negative ones. Considerable empirical evidence supports this idea, for example. Wenzlaff, Wegner, and Roper (1988) found that depressed subjects were quite effective in suppressing positive thoughts but had considerable difficulty inhibiting negative thoughts. Moreover, consistent with the idea of an ironic monitoring process, depressed subjects who were engaged in suppression eventually reported as many or more negative thoughts as those who were not trying to control their thoughts at all.

Gotlib and McCann (1984, Experiment 1) had depressed and nondepressed individuals participate in a variation of the Stroop task that required subjects to name colors of tachistoscopically presented words that were depressed, neutral, or manic in content. The investigators found that depressed subjects had longer response latencies to the depressed-content words than to the nondepressed-content words. Evidently, the depressed-content words constituted a chronically accessible construct for depressed subjects and were therefore particularly distracting. Analogous results have been obtained with anxious individuals using a modified Stroop task with anxiety-content words (Martin, Williams, & Clark, 1991; Mathews & MacLeod, 1985; Mogg & Marden, 1990; Richards & Millwood, 1989).

In another study (Wenzlaff, 1993a, Experiment 1), depressed and nondepressed subjects were given a series of scrambled sentences each containing six words. By using five of the six words, subjects could unscramble each sentence to form either a positive or a negative thought (e.g., "The future looks very bright" or "The future looks very dismal"). Given a limited amount of time to unscramble as many sentences as possible, some subjects were instructed to form positive statements, some were asked to form negative statements, and others received no valence instructions. The results indicated that depressed subjects who were given no valence instructions unscrambled fewer positive sentences and more negative ones than did their nondepressed counterparts, suggesting that depressive thoughts occurred more automatically for the depressed subjects. The results also revealed that depressed subjects who were asked to form positive thoughts had particular difficulty: They completed fewer sentences and made more errors than any other group. The apparent automatic nature of depressed subjects' negative thoughts seemed to facilitate their performance when they were instructed to form negative sentences: they completed more sentences and made fewer errors than did any other group.

Eysenck, MacLeod, and Mathews (1987) obtained analogous results in a study examining the role of anxiety in the interpretation of ambiguous stimuli. Subjects were asked to write down the spellings of auditorially presented homophones some of which could be interpreted in either a threatening or neutral fashion (e.g., die, dye; pain, pane). The results indicated that anxious subjects were more likely than their nonanxious counterparts to interpret the homophones in a threatening manner. In another experiment (Eysenck, Mogg, May, Richards, & Mathews, 1991), it was found that anxious subjects showed a mood-congruent interpretive bias on a recognition memory task. Subjects were presented with ambiguous sentences that could be interpreted in either a threatening or a nonthreatening manner (e.g., "The two men watched as the chest was opened"). Subsequently, on an unexpected recognition task that involved reworded sentences connoting either clearly threatening or neutral interpretations, anxious subjects recognized more of the threatening interpretations and fewer of the neutral ones than did the controls.

The automatic nature of anxiety-related thoughts was examined in a different way in an experiment by Mathews and MacLeod (1986). The investigators tested the notion that threatening stimuli would be especially distracting to anxious subjects because they should be automatically vigilant for such information. The investigators asked subjects to shadow (i.e., repeat aloud) the message presented to one ear, while ignoring occasional threatening and neutral words presented to the other ear. The results indicated a tendency for threatening words on the nonattended channel to disrupt shadowing performance more than neutral words for the anxious subjects but not for the controls. Subjects reported being unaware of the words on the unattended channel, so it appears that preattentive processes were involved in the obtained distraction effects—further supporting the notion that a monitoring process occurs at an automatic level.

A number of studies have examined the mental control abilities of depressed and anxious individuals under conditions of experimental cognitive load. This research affords an explicit test of the assumption that the automatic nature of the monitoring processes should be most likely to lead to ironic effects when cognitive resources are in short supply. Thus, situations that tax attentional resources should minimize the occurrence of positive thoughts and maximize the likelihood of negative ones.

Bargh and Tota (1988) had depressed and nondepressed subjects judge each of a series of depressed-content and nondepressed-content adjectives as to descriptiveness of the self or of the average person. While making each judgment, half the subjects held six digits in working memory, whereas the other half had no concurrent memory load. The investigators assessed subjects' latency to respond as an index of the relative ease with which judgments were made. As predicted, depressed subjects' self-referent judgments of depressive-content adjectives were less affected by memory load than were their judgments of nondepressive-content adjectives, indicating relatively automatic processing of the depressive words.

The idea that attentional demands facilitate ironic monitoring effects was also examined in a study by Wenzlaff (1993a, Experiment 2). The procedure used the scrambled sentence task described earlier in which sentences could be unscrambled to form either depressive themes or positive ones. Some subjects were instructed to unscramble the

sentences into positive sentences, others were asked to form negative sentences, and a third group received no valence instructions. Subjects were further divided into three groups: nondepressed, depressed, and formerly depressed but currently in remission. Half the subjects were asked to maintain a 6-digit number in working memory, whereas the other half had no concurrent memory load.

The results of the no-memory load condition paralleled those obtained by Wenzlaff (1993a, Experiment 1). Depressed subjects who were given no valence instructions formed more negative sentences and fewer positive ones than did their nondepressed or formerly depressed counterparts. When instructed to form positive sentences, depressed subjects unscrambled fewer sentences and made more errors than their counterparts. Conversely, in the negative-instruction condition depressed subjects correctly unscrambled more sentences and made fewer errors than either of the other two groups. The overall pattern of results for the nondepressed and formerly depressed subjects was opposite of that for the depressed.

Of particular interest here are the results obtained in the memory load condition. For depressed subjects and nondepressed subjects, the load manipulation magnified the effects obtained in the no-load condition. This magnification suggests that the memory load was taxing cognitive resources, thereby facilitating ironic monitoring processes which are more automatic and require less attentional resources than the intentional operating system. What is especially noteworthy, however, is that the memory load *reversed* the pattern of results for the formerly depressed subjects, causing them to perform like the currently depressed subjects, whereas under no load their performance paralleled that of the nondepressed. When given no valence instructions and memory load, formerly depressed subjects unscrambled more negative sentences and fewer positive ones than did the nondepressed. With instructions to form positive sentences, formerly depressed subjects under cognitive load unscrambled fewer sentences and made more errors than their nondepressed counterparts. These findings suggest that although formerly depressed individuals may not currently display depressive symptoms, negative thoughts lurk just below the surface of awareness. When cognitive resources are taxed, the ability to suppress these thoughts is undermined, thus allowing them to intrude on consciousness.

Finally, MacLeod (1990) conducted a pair of studies examining the impact of arousal on trait-anxious subjects' judgments in the homophone task described earlier. The homophone task was carried out under normal conditions or high-arousal conditions (following exercise). In both studies, high trait-anxious subjects showed an increased tendency to provide threatening interpretations of the homophones when aroused, whereas low trait-anxious subjects showed a decreased tendency. Assuming that the arousal manipulation served as a load manipulation, these results are analogous to those obtained in the previous studies examining depression and mental control.

The evidence indicates that because of their enhanced accessibility, negative thoughts are particularly difficult for depressed and anxious individuals to control, especially when cognitive resources are taxed. The usual interpretation of this effect in the literature is to say that depression promotes this accessibility, but the specific form of this effect is not clear. The present formulation suggests that thought suppression may in fact create the effect by initiating an automatic search for the unwanted thoughts and thereby further increasing their accessibility. We next consider some potentially more fruitful approaches to controlling negative moods.

### Mental Control and Emotional Well-Being

One lesson that becomes evident from examining the literature is that thought suppression is a counterproductive way to overcome chronic negative moods. In addition to promoting an ironic monitoring process that causes an unproductive vacillation between rumination and avoidance, failing to confront negative thoughts can keep people from adequately understanding potential warnings and valuable information that such thoughts and their corresponding moods can offer. A number of theorists have pointed out that emotions—both positive and negative—can help make us aware of situations in our world that should be responded to, or that no longer need response and action (e.g., Frijda, 1988; Schwarz, 1990). Thus, there are times when confronting and trying to understand unwanted thoughts and feelings is wiser than trying to avoid them.

The potential importance of acknowledging negative thoughts and emotions is an idea that has historically been advocated by a variety of cultures and religion. In virtually all cultures, some system has evolved that encourages people to disclose unpleasant experiences or thoughts without fear of retribution (Pennebaker, 1993). Although the methods and rationales differ, all the major world religions encourage some type of acknowledgment and disclosure of transgressions or fears. The idea that the disclosure of unwanted thoughts can be beneficial has received empirical support. For instance, individuals who had suffered traumatic experiences in childhood and who had not confided those traumas to others were significantly more likely to have a variety of serious health problems than were people who either had not had traumas or who had confided them (Pennebaker & Susman, 1988).

In an experimental test of the effects of expression and disclosure, Pennebaker and Beall (1986) asked undergraduates to write either about the most traumatic experiences of their lives or about trivial assigned topics for 4 consecutive days. A 6-month follow-up showed that the expression groups reported relatively better health, including fewer visits to the Student Health Center (for more complete reviews of this literature, see Pennebaker, 1989, 1993). The health benefits of disclosure may be the result of a number of factors including desensitization, enhanced understanding, acceptance, and resolution. We would add to this list the avoidance of ironic effects of thought suppression that can lead to rumination and preoccupation. It has been found that among individuals whose spouses had died unexpectedly, the more they talked about the death, the less they ruminated about it (Pennebaker & O'Heeron, 1984).

The beneficial effects of disclosing painful and unwanted thoughts, is one of the common assumptions of

most psychotherapies. Although they differ in technique and rationale, these therapies actively encourage clients to express their unwanted and potentially frightening thoughts and emotions in an atmosphere of acceptance. Sigmund Freud, for instance, believed that unwanted thoughts and emotions that were repressed or denied would continue to exert a negative psychological influence until they were uncovered and expressed. He exhorted his clients to abandon the censorship of their thoughts and allow themselves to express whatever came into their minds. Carl Rogers developed his person-centered approach to therapy on the assumption that people develop emotional problems as the result of a lack of self-knowledge and acceptance. Although he did not explicitly acknowledge the elimination of thought suppression as a therapeutic goal, Rogers nevertheless hoped he could create an atmosphere of acceptance that would discourage self-censorship and allow clients to acknowledge unwanted thoughts. There are a host of other specific treatment approaches that in various ways try to encourage the client to explore suppressed or denied aspects of themselves and their worlds (for a comparative analysis, see Frank & Frank, 1991).

Among the newest and most popular treatment approaches to emotional disorders is cognitive therapy, which is based on the idea that cognition mediates emotional and behavioral dysfunction (e.g., Beck & Emery, 1985; Beck, Rush, Shaw, & Emery, 1979; Ellis, 1963; Meichenbaum, 1977). From the present perspective, the mere expression of these disturbing thoughts could have therapeutic value. However, cognitive therapists take the additional step of encouraging clients to entertain more adaptive ways of thinking, in some instances actually supplying their clients with positive thoughts (e.g., Ellis, 1963). This type of assisted mental control could be helpful to the extent that it does not undermine the client's sense of personal control and self-efficacy.

The issue of personal responsibility harkens back to our discussion of the superiority of chosen mental control strategies over imposed ones. Observers of the therapeutic process agree that real improvement occurs only when clients develop a sense of personal efficacy and attribute changes to their own increased skillfulness, and not that of the therapist (e.g., Frank & Frank, 1991; Murdock & Altmaier, 1991; Zeiss, Lewinsohn, & Munoz, 1977). In a review of the literature, Kopel and Arkowitz (1975) conclude that self-attributed behavior change is of longer duration than is behavior change attributed to an external agency such as a therapist. Thus, it is important for clients to take personal responsibility for changes in their thinking if these changes are to have any beneficial impact on their moods. This point was empirically demonstrated by Wenzlaff and LePage (1993) who asked depressed individuals to entertain positive thoughts under conditions of high choice (i.e., the task was optional) or low choice (i.e., the task seemed mandatory). The results indicated that although both groups were able to generate positive thoughts, mood improvement occurred only in the high choice group.

The notion that personal attribution for changes in cognition plays an important role in any subsequent mood improvement suggests that therapists should employ methods that emphasize personal responsibility and choice. Perhaps the most striking example of a therapeutic approach that is based primarily on this idea is the set of methods collectively known as paradoxical interventions (Coyne, 1989; Dowd & Milne, 1986). Among the methods used in paradoxical therapy is symptom prescription wherein the therapist instructs the client to perform the problem behavior deliberately or even to exaggerate it. For example, an anxious individual may be told to deliberately think and obsess about anxiety-provoking situations. The usual rationale is that clients will react against the instructions and assume personal responsibility for behaving in the opposite direction. Although paradoxical approaches have been shown to be related to positive outcomes (Dowd & Milne, 1986), they should be used judiciously. For example, no one would want to risk encouraging a depressed person to engage in suicidal thoughts or act on them. Still, it seems that if self-imposed mental control is sometimes responsible for the negative states of mind people suffer, then the therapeutic recommendation that such control be reversed can have potentially beneficial results.

Despite the potential benefits of psychotherapy, there is undoubtedly a large portion of emotionally disturbed individuals who never seek professional help. Many seem to recover on their own, and others suffer in silence. Surprisingly, there has been relatively little research concerning how emotionally disturbed individuals independently cope with their situation (Doerfler & Richards, 1981). The few available studies suggest that a key factor to overcoming emotional problems is having confiding relationships with others (Coyne, Burchill, & Stiles, 1991). In contrast, strategies of avoidance and suppression of negative thoughts and feelings are associated with poor outcomes (e.g., Parker, Brown, & Blignault, 1986; Pennebaker, 1989; 1993). These findings are consistent with the view that expression of unwanted thoughts is a more effective mood improvement strategy than is avoidance and suppression.

In the end, whether mental control of emotion is undertaken as a personal project or through consultation with a professional psychologist, the processes and consequences of control are likely to be similar. Forms of mental control that are wisely chosen and applied offer some hope for relief from emotional problems. Mental control that is unchosen, too frequent or rigorous, or attempted under conditions of stress or load likely to foster ironic effects, will probably not succeed and instead may thrust the individual back into the unwanted emotional state.

## MENTAL CONTROL AND SOCIAL LIFE

Some of an individual's states of mind are socially valued. Most mourners at a funeral would probably agree, for example, that their fellow mourners should be feeling the same sad state, and audience members at a comedy club would usually concur that others there should be happy. States of mind that represent belief in something that others want one to believe are also valued: the participants in a religious revival surely desire that their fervent beliefs are held by all present. People value mental states in others

when those states represent inclinations to behave in socially relevant ways. From the point of view of the person who is experiencing social pressure to behave, in turn, mental control is also valuable. Trying to impress others with one's wit is far easier when one is in a cheerful state of mind; trying to threaten others is far more likely to succeed if one is indeed feeling angry; attempts not to be an obnoxious complainer are far less complicated if one is in fact in a pleasant mood. In short, socially motivated behaviors are often facilitated by the adoption of an appropriate mental state, and mental control is therefore a useful capacity for the individual to exercise in social settings (Pennebaker, 1993; Wegner & Erber, 1993).

We wish to consider the social matrix of mental control in this section. First, we will examine the depth of the changes in mental states wrought by mental control in social settings. Then, we will explore the common features of social settings that promote mental control. In this endeavor, we will consider two examples of social situations that typically demand mental control—situations involving deception or secrecy, and those that prompt the moderation of prejudice.

### The Falsity of "False" Mental States

Mental control in service of social appropriateness has often been described as a form of duplicity, malingering, or outright fraud. We all know that the salesperson who cheerily compliments us on the fit of that item of clothing we are trying on is just faking admiration, don't we? This is a quintessential act of self-presentation, and such feigned mental states seem to be the hallmark of mental control that is performed for social purposes. The present model of mental control suggests, however, that "faking" may not be an apt description of what happens in such situations. Even apparently duplicitous acts, from phony smiles to sweet talk or threatening poses, occur in the context of controlled mental states that are themselves as authentic as any mental state. Each socially motivated gesture has its associated mental condition, an inner reflection that occurs however briefly, but that imposes a genuine transformation on the person's mind at that time.

A large body of social psychological evidence indicates that the changes in mental states that appear to be erected only temporarily for social goals can instead be remarkably lasting. Public self-presentation may influence one's private self-esteem (Jones, Rhodewalt, Berglas, & Skelton, 1982), public position statements can change private attitudes (Higgins & Rholes, 1978; Nail, 1986), public emotional displays can influence private emotions (Laird, 1974), and so on. The carryover from socially motivated mental control to permanent change is so common that it calls into question whether there is some underlying "true" mental state that is simply covered over during social self-presentation, or whether this assumption of an inner "true" state and outer "false" appearance is itself merely an illusion (e.g., Leary & Kowalski, 1990; Tetlock & Manstead, 1985; Wegner & Erber, 1993).

A useful way to think about this issue is to note that any mental state must be caused; it is traceable either to uncontrollable forces that hold it in place, or to the imposition of mental control that is responsible for its presence. When a person exerts mental control (albeit for some transitory social goal), the new state is produced and whatever prior state was there is now gone. This new state will prevail until either some uncontrollable forces change it or the person imposes further mental control. In some cases, the same uncontrollable forces will be present after the exercise of mental control that were there before it, and in such cases it seems useful to describe the mental state produced by control as less "true" than the original state. The original state will be renewed by the uncontrollable forces following mental control and thus looks very much as though it were true in the first place. For example, when a woman is depressed by her life circumstances, and yet attempts to be happy and pleasant in interactions with her husband one day, the life circumstances may retain their influence on her mental state well after her brief use of mental control and she will often revert to her sad state and appear truly depressed.

There are also cases, however, in which such uncontrollable forces are absent. When this happens, mental control exerted for temporary social purposes may have lasting effects that are themselves entirely true. After all, it is unlikely that people invariably deploy immediate corrective mental control strategies after every instance of mental control to reverse or compensate for the prior change. A woman who has just tried to "fake" happiness to please a spouse, for example, is unlikely subsequently to work as hard to erase this mental state as she worked to create it. The happiness may well stick, concocted entirely by the desire to please someone. The operating process established in the pursuit of mental control works in the same way no matter why it is invoked, and it therefore pursues its search for state-related mental contents, supervised as usual by the monitoring process.

A faker would have to be especially clever in using mental control if he or she wished specifically to return to the original state following any mentally controlled change. Such memory for original or true states would require not only all the mental apparatus involved in creating the false state—the operating and monitoring processes—but also the deployment of a pair of complementary processes aimed at preserving the original underlying state for later. Sometimes, this might be worth the trouble. When socially motivated mental states are particularly repugnant, a person could very well plan to return from them with special vigor. Putting on a sad face to visit someone who is ill, for example, could require follow-up recovery plans aimed at reinstating happy or normal moods. One might make a special point of making fun of the sick person just to regain a positive mood (and sick sense of humor). Short of such elaborate recovery planning, however, people may often find the mental changes they impose on themselves to be quite lasting.

The impression that a person is faking during socially induced mental control probably often derives from the operation of ironic processes. During the intense effort to "be cool" in the face of a threatening audience, for example, a person will naturally engage in an ironic monitoring process that searches for evidence of failure to be cool. When the stress of the situation mounts, the ironic process will then

often guide mental states—and this person will feel anxious. And, if behavior is required of the person at the time (with no chance for advance planning and editing), frequent counterintentional actions will ensue. These behaviors will look very much as though the person has lapsed back to the true state that mental control is attempting to cover up. The poor soul trying to stay cool may stammer or go blank or otherwise appear to produce evidence of precisely the state that he or she was trying to avoid. But far from being true indications of that state, these behaviors will be evidence only of ironic processes in the desire to control it.

This view of socially induced mental control can be summarized quite simply: The mental control processes that we use to facilitate our social interactions do not merely visit illusory or shallow changes on our consciousness. Rather, they create active mental states that reorient us to behave in ways that promote our social goals. These changes may *appear* to be an impermanent façade when there are chronic background circumstances influencing our mental states, or when our efforts yield ironic errors, but they nonetheless are as real, true, and potentially lasting as any mental state introduced by any other cause.

## Social Spheres of Mental Control

The social circumstances that necessitate mental control are some of the more difficult and demanding experiences of daily life. Conflicting pressures come to bear, in that one state of mind may be prompted strongly or automatically by the situation, whereas another is to be preferred for some compelling social or moral reason. The state selection process, in other words, comes up against the natural and uncontrolled forces that produce mental states, and so sets in motion a mental control task that is particularly arduous. Bodies of social psychological research exist that are pertinent to these, and we wish to focus in particular on deception and on the correction of prejudice.

### *Deception and Secrecy*

When a person intentionally deceives another or keeps information secret from another, the person must necessarily engage in an elaborate exercise of mental control. Children prior to the age of 4 or so find it nearly impossible to lie or keep a secret for long (LaFrenière, 1988), so this must be a task that requires mental control facilities acquired during cognitive development. Part of the problem even for adults is that despite knowing the truth (or the secret), the person must pretend not to know it. Such pretense would be facilitated by the actual absence of the truth in current consciousness, so thought suppression is a likely strategy (see Lane & Wegner, 1994a; Pennebaker, 1989, 1990; Wegner, 1989). The problem is further complicated in cases of active deception—when a lie is being told rather than just the truth being omitted. In this instance, the perpetrator must move beyond simple suppression to pretend to believe something else. This feigned belief is an additional mental state that must be approached through mental control.

It may be, however, that this seeming complication of active deception actually makes it easier to accomplish than secrecy or other forms of deception by omission. In the process of substituting a lie for the truth, the liar moves from a simple strategy of suppression (of the truth) to a compound strategy that resembles self-distraction. This compound strategy involves thinking about and believing the lie as a means of avoiding thoughts about and belief in the truth. Following the logic of the ironic process model, we can see that the secret-keeper is going to be saddled with a more troublesome ironic process than the active deceiver. The ironic process that accrues during secrecy monitors the secret itself, whereas the ironic process produced by active lying will monitor only the failure to express belief in the lie. Under cognitive load, then, the secret-keeper will be more likely than the active liar to obsess about the truth and potentially give it away.

There is evidence that active lying is itself difficult under conditions that enhance motivation and cognitive load. Under strong motivation to lie successfully, people become especially prone to display signs of their deceit. Such motivational impairment of deception has been observed by DePaulo, Lanier, and Davis (1983). They found it easier to detect the deceit of the motivated liar as the result of subtle nonverbal signs. With the imposition of a mental load of sorts—in the form of an admonition that the target of the lie is especially wary—this effect is further magnified (DePaulo, LeMay, & Epstein, 1991). In the case of active deception, then, behaviors reflecting ironic processes of mental control seem to arise under conditions suggested by our analysis.

Our reasoning suggests that keeping a secret is an even more perplexing task that could quite regularly prompt ironic preoccupation with thoughts of the secret. Lane and Wegner (1994b) have tested this possibility in several studies. In one experiment, for example, they arranged for subjects to make statements on several topics. Some of the statements were to be true, others were to be false, and yet others were to be true yet kept secret from the experimenter. Later, subjects' memory for the topics of these statements was assessed, and it was found that the secret topics were recalled earlier in sequence than the others. This suggests that the secret topics were more accessible to consciousness. In another study, it was found that the personal topics a subject rated as secret (on a list of 50 possible topics) were also rated by that subject, on average, as more likely to be chosen for suppression and as more likely to come to mind intrusively. And in a third study, it was found that when subjects were asked to keep a word secret from the experimenter, their reaction times to naming the color of the word when it appeared on a computer screen were slowed relative to other words. This, too, can be taken as evidence for the cognitive accessibility of secrets (cf. Wegner & Erber, 1992).

These signs of preoccupation with contrived secrets suggest that some of the secrets people choose to harbor in everyday life may become especially absorbing to them. People who elect to keep a close relationship secret, for

example, would be expected to exert frequent mental control—suppressing thoughts of their partner or emotional responses to their partner whenever they are in the presence of those from whom the relationship is secret. The ironic return of these thoughts and emotions would likely fuel not only obsessive preoccupation with the partner, but perhaps intensified attraction to the partner, too. Wegner, Lane, and Dimitri (1994) have found that secrecy is linked to obsession and attraction in just this way. In two surveys about past relationships, for example, they found that subjects reported greater current obsessive preoccupation with old flames when their relationships with those partners had been secret in some way. Obsessive preoccupation in these cases included reporting continued intrusive thoughts about the relationship and continued attempts to suppress those thoughts.

This remarkable attention to secret relationships was also observed in a laboratory experiment (Wegner, Lane, & Dimitri, 1994, Study 3). Subjects for this study were brought to the lab in groups of four. Each subject was paired with a subject of the opposite sex and was asked to play a card game in competition with the other pair. All sat at a table together, and in each group one pair was assigned (by written instruction) to engage in "nonverbal communication" with their feet in an attempt to influence the game. They were directed to keep this activity secret from the other couple, or they were allowed to let it be known. Following the game, all subjects were asked individually to report their attraction to their partner. The couples who played secret footsie reported greater attraction to each other than did those who played footsie without secrecy, and also were more attracted than couples who didn't play footsie at all.

The mental control we exert in the act of concealing information from others, in sum, can have unexpected effects. We may deceive others or keep secrets from them in the hope that we will not suffer the social consequences of this information, but in so doing we make ourselves susceptible to other consequences that can come at us from entirely different directions. At the extreme, the mental control exercises required in our cover-up create such vexing ironic returns that we become tragically devoted to the very topic we had hoped to wish away.

### *Control of Prejudice*

There are times in life when our moral sensibilities lead us to try to gainsay our impulsive social judgments. In particular, we may be motivated to overcome prejudices and social stereotypes in the interest of fairness or accuracy (Allport, 1954; Weitz, 1972). Devine (1989) and Fiske (1989) have proposed that controlled cognitive processes may overtake and correct for the automatic activation of stereotypes in judgment and inference, such that even when people have knowledge of a stereotype of some group, they may produce judgments of group members that have been adjusted to overcome this influence. This kind of mental control is by no means easy, because it takes considerable mental work and can still can go awry in several ways.

The initial difficulty here is that prejudiced judgments are often accomplished automatically, in the sense that they can be unintentional, relatively effortless, and unconscious as well. Findings from several experiments indicate that conditions that interfere with conscious and controlled processing do not necessarily impede stereotype activation or application. Dovidio, Evans, and Tyler (1986), for example, found that priming of the terms *black* and *white* influenced subjects' choice reaction times in directions consistent with racial prejudice. Perdue and Gurtman (1990) found that priming of the terms *young* and *old* increased the accessibility of associated traits, even though the primes were speeded and masked so as to occur outside subjects' awareness. It is often found that stereotyping is more likely under conditions of load—when it could occur automatically—than without load when conscious and effortful thought can intervene (Pratto & Bargh, 1991; Skowronski, Carlston, & Isham, 1993). Stereotyping does not inevitably occur automatically, however, as there are judgment situations in which the relevance of the stereotype is so low that it remains inactive (Gilbert & Hixon, 1991).

Conscious and effortful thinking can undermine automatic stereotyping when it does occur. The idea that the mental control of prejudice usually takes work is consistent with the general observation that intentional influences on judgment or belief require attentional resources (Gilbert, 1991, 1993). To the degree that a person believes a stereotype, but nonetheless desires to control its influence on judgment, mental effort will be required. Even a person who does not believe in a stereotypical characterization of a group, however, still is likely to know of that stereotype as the result of communication from others (Devine, 1989) and will thus need to keep such unreliable or disbelieved knowledge from affecting decisions as well. Accessing various sources of information for decision making is not a particularly conscious process even with these good intentions, of course, so scrupulousness about conscious contents may not always save the day.

Two different strategies of mental control have been singled out as possible aids to the avoidance of prejudice. The most obvious possibility is the suppression of prejudiced thoughts (Wegner, 1989). Effort exerted toward suppressing stereotypical thoughts could conceivably undermine their use in judgment and inference, such that other bases of inference would prevail. The alternative to simple suppression is concentration on features of the target of judgment that are unrelated to the target's group membership. These individuating characteristics are often the focus of attention when perceivers are motivated to make impressions that refrain from drawing on group stereotypes (Fiske & Neuberg, 1990). As noted earlier, such a compound or distraction strategy is likely to be more effective in the long run than simple suppression.

In their studies of the instructed suppression of a stereotype, Macrae, Bodenhausen, Milne, and Wheeler (in press) have found that suppression is indeed problematic. In one such study, some subjects listening to an audiotape for an impression formation task were asked to suppress their stereotypes about the target's social

group, whereas others were asked to suppress distracting information that was heard on the background of the tape, and yet others were asked to suppress both. Subjects in both groups suppressing stereotypes, but not those only suppressing the distracting information, showed evidence of effortful mental activity. Their performance on a concurrent probe task was impaired. And, subjects in the stereotype suppression conditions were less inclined than those suppressing the distracting information to evaluate the target in a way consistent with the stereotype. This research also found, however, that the work of suppressing the stereotype kept subjects from attending fully to individuating information—data irrelevant to the stereotype that would aid in forming an impression of the target as an individual. Individuating information normally takes time and effort to acquire (Fiske & Neuberg, 1990), and the suppression of the stereotype apparently interferes with this pursuit.

The litany of difficulties accruing in the suppression of prejudice is hardly complete with this example, however, as there are yet further obstacles. To suppress a prejudiced state of mind, as we have described it, is to introduce operating and monitoring processes and their inevitable potential for the production of ironic thoughts and actions. This eventuality has been tested in research by Wegner, Erber, and Bowman (1993) on the mental control of sexism. Subjects for these studies were given the task of completing sentences that prompted sexist responses, either under time pressure to induce mental load or without such pressure. Some subjects were instructed not to be sexist in their completions, whereas others were given no particular instruction. Ratings were made by observers of the degree of sexism in each sentence completion. It was found that without the imposition of time pressure, subjects made fewer sexist responses when they were trying not to be sexist. However, with time pressure imposed, subjects made more sexist responses when they were trying not to be sexist than when they were not attempting any mental control at all. This tendency occurred equally for both males and females, and equally as well for subjects whose personal attitudes were sexist or nonsexist. The desire to control sexist responding, at least under the conditions of diminished cognitive resources produced by time pressure, created the ironic tendency instead to blurt out sexist remarks.

The suppression of prejudicial thinking can also prompt the ironic return of such thought after the suppression is discontinued. Macrae, Bodenhausen, Milne, and Jetten (1994, Experiment 2) asked subjects to suppress stereotypical thoughts in imagining the life of a target person belonging to a stereotyped group (a "skinhead"), and then later gave these subjects the opportunity to choose how close to sit to this target. Compared with subjects who were not instructed to suppress, these subjects created less stereotypical imaginings about the target. However, also as compared with these uninstructed subjects, the stereotype suppressors then chose to sit at a greater distance from the target. These researchers replicated this effect in several formats, suggesting that the suppression of prejudicial thoughts may at first be successful—but can then prompt a rebound of such thoughts that may fuel negative behavior toward the stereotyped target.

When mental control has potentially troublesome consequences like these, we can begin to wonder how wise it is to assume that we should always meet unwanted prejudices with attempts at control. To some degree, these difficulties may be a matter of the choice of strategies, in that replacing simple suppression with more enlightened procedures could produce more desirable results. Eventually, however, it may be that the main problem that confronts us is grappling with just how much control it is good to have. It is possible not only to undercontrol our lapses in judgment, but to overcontrol them as well, with the potential result that we fall into paradoxical territory in which overcontrol *becomes* undercontrol. Then, no matter how guilty we may feel about making inaccurate or unfair social judgments (Devine, Monteith, Zuwerink, & Elliot, 1991), influencing these judgments may be beyond our ability (cf. Gaertner & Dovidio, 1986). When we use mental control to manage the "contamination" of our judgments by unwanted sources of influence (Wilson & Brekke, 1994), we are likely always to find that our efforts amount to a cleanup detail rather than a return to the pristine ideal of an untainted mental landscape.

## CONCLUSIONS

The control *of* the mind *by* the mind is indeed a curious business. In this chapter, we have seen multiple vicissitudes of mental control and the complications that this ability inserts into mental and social life. But would we have it any other way? Mental control is a capacity that makes us feel most human, most the masters of our own domains. Because we can at least sometimes enjoy the control of what we think, feel, or believe, we are less the mirrors of our psychological environments and more the perpetrators of them. As it turns out, however, the use of mental control is not something children should try at home. The attempt to direct the mind can go as badly as society's attempts to direct itself through government, and we all know how bad that can be.

Mental control may be needed at every turn in our attempts to grapple successfully with life, but it can all too often return not only failure, but the very worst possible failures we would hope to avoid. Indeed, it is by the very hope to avoid some states of mind that we invite them. In monitoring how we're doing in a particular mental pursuit, we become aware of those items that will ruin that pursuit—and they often then come forward to do just that. Mental control may contribute to emotional disturbances from depression to anxiety. Mental control can surface as well as the force that leads us to become obsessed with secrets, lies, and indiscretions of the past. Mental control can also backfire when we hope to control our prejudices, so to contribute to the expression of the very attitudes we would hope might never guide our actions. The blessing we appreciate in mental control is mixed with liberal portions of curse, and it is high time we studied it more fully so as to learn not only how we can bend it to our wishes, but aim it toward our well-being.

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